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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 20, 1944

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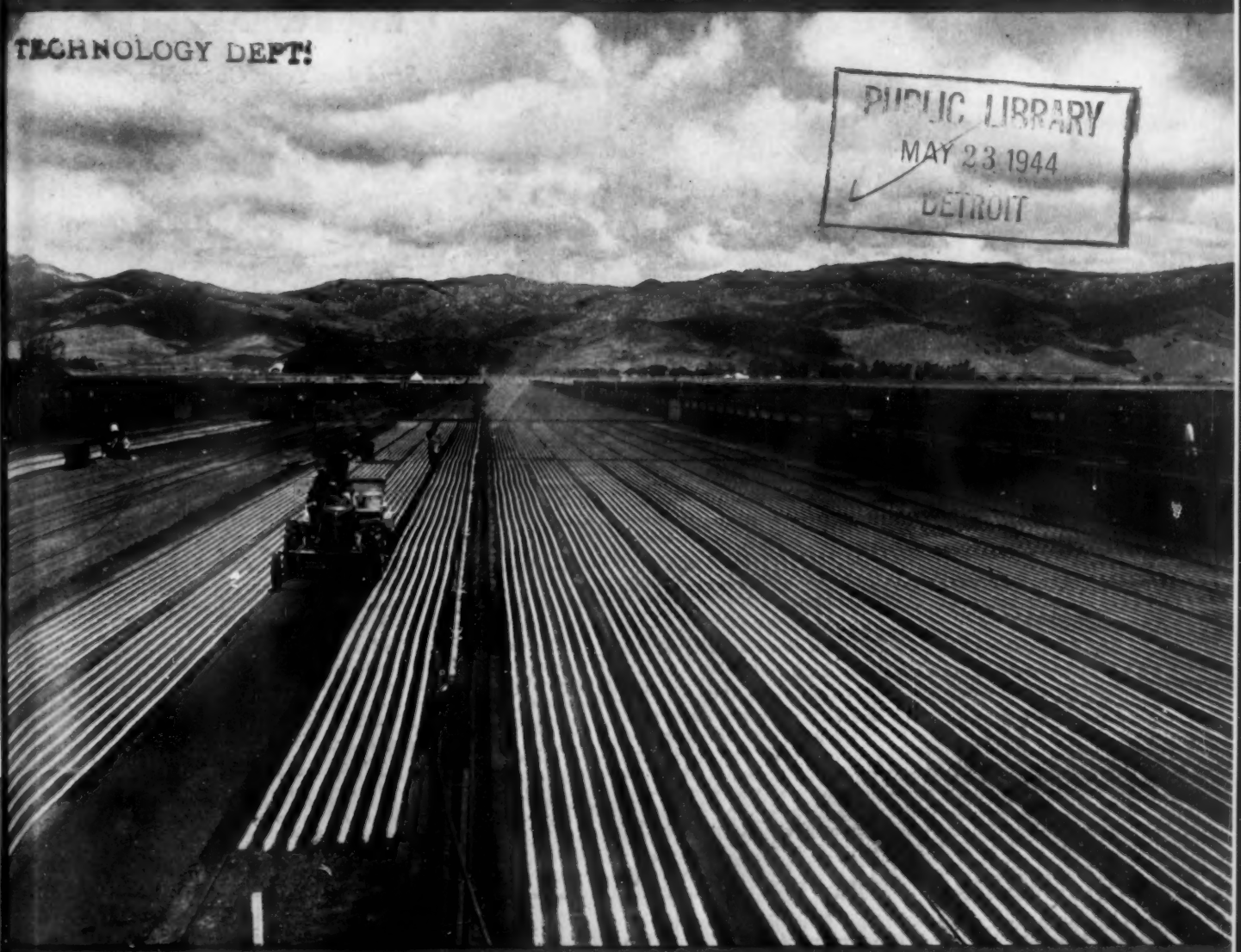

For Emergency Rubber

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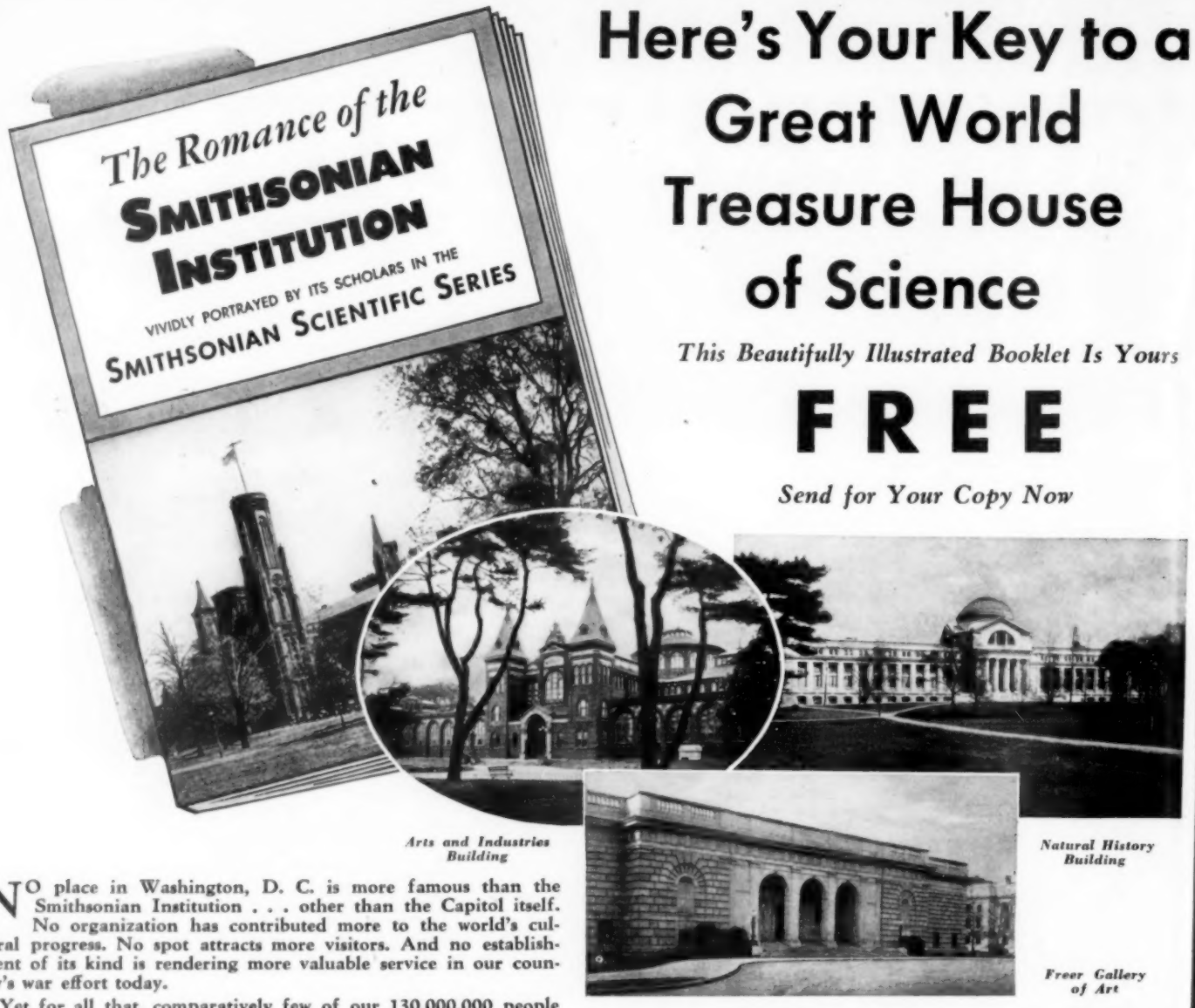

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(S.N.L. 5-20-44)

PSYCHIATRY

Brain-Cutting Operation

Restoration to useful lives of more than 50% of patients with mental disease is accomplished by surgical procedure in which tissues are cut but not removed.

➤ MORE THAN HALF the patients with the mental disease, schizophrenia, who were treated by a brain-cutting operation are now leading useful lives and only 15% are still so sick they have to remain in a mental hospital, Dr. Walter Freeman and Dr. James W. Watts, of Washington, D. C., reported at the Philadelphia meeting of the American Psychiatric Association.

The patients in whom the operation has been successful have been "usefully occupied" for from six months to as long as seven years after the operation.

Prefrontal lobotomy is the technical name for this surgical procedure, in which the brain is cut but no part of it is removed.

"The prime factor in securing a good result," the Washington doctors report from their study of the patients, "is the degree of emotional tension still present at the time of operation. The battle is lost only when the patient stops fighting."

The operation may lead to the discovery of the mental and emotional processes that cause mental disease, in the opinion of Dr. J. A. Kindwall, of Wauwatosa, Wis., who, with Dr. David Cleveland, of Milwaukee, reported using the procedure in 15 cases.

The operation brings about a more profound change in a person than any other treatment hitherto used, "though not more profound than that wrought by the mental illness itself," Dr. Kindwall stated from his study of facts accumulated over the past few years.

"The patient after the operation is not the same person as before the mental illness," he said; "but he is usually happier, more out-going, and easier; often productive, sometimes even more productive than before."

The behavior pattern established in the brain by severe mental illness is changed by the operation, and anxiety, the most common factor in mental illness, is allayed. The results of the operation are said to be "encouraging to science in its thousand-year search for an understanding and a cure of insanity."

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Insulin Shock Treatment

➤ SIGNIFICANT findings in a survey of seven years' experience with insulin shock treatment of some 700 patients with schizophrenia were reported by Dr. Alexander Gralnick, of Central Islip, N. Y., State Hospital, as follows:

Worthwhile results are obtained in cases of a duration up to two years. The treatment causes quicker remissions, or disappearance of symptoms. The age of the patient and the type of schizophrenia are not significant factors. The number of treatments given and the coma produced bear no constant relation to the results obtained. Women respond better than men. Although by no means as effective as the early enthusiastic reports led one to believe, the method has definite value, Dr. Gralnick declared.

It is not merely insulin treatment but the specific insulin treatment situation that counts, in his opinion. This explains why patients who have not been sick long do so well under the treatment. They are still close enough to reality to respond to the treatment situation, whereas patients who have been sick longer are so withdrawn from reality that the very same drug in the very same treatment situation can have little or no effect.

Further study will eventually show the meaning this particular treatment situation has for patients and may, he said, point the way to some other treatment situation that will help those ill too long to be helped by insulin shock.

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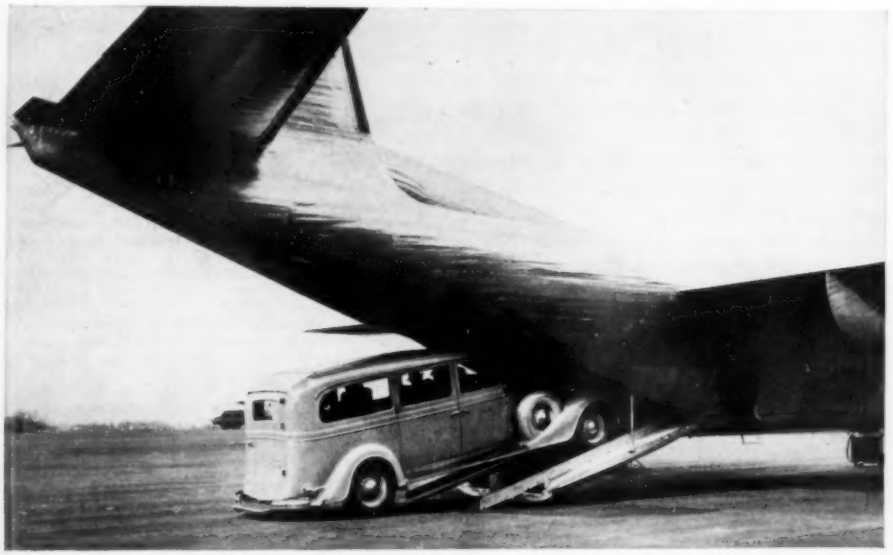

FLYING AMBULANCE—This is the first big aircraft made of stainless steel ever to be put into production. This official U. S. Navy photograph shows a car ambulance rolling up the ramp into the cargo compartment.

AERONAUTICS

Sky Giant of Steel Accepted by U. S. Navy

➤ THE FIRST large-sized airplane of stainless steel construction ever put into production has been accepted by the Navy after extensive trial board tests. It will be used to carry vital cargo to the fleet.

Named the "Conestoga," after the covered wagons of pioneer days, the RB1 Flight Ship was designed and is being produced by the Edward G. Budd Company of Philadelphia. It is the first airplane obtained by the Navy which was designed especially for cargo carrying. Other Navy cargo planes are adaptations of combat aircraft and passenger transports.

The "Conestoga" is a high-wing monoplane, 68 feet long, with 100-foot wingspread, and is powered by two Pratt and Whitney engines having a take-off power of 1,200 horsepower each. It has a cruising speed of 165 miles per hour and a flight range, with maximum

load of 1,700 miles. This may be extended to 2,500 miles by use of auxiliary fuel tanks.

Except for plywood doors and floor, the airplane is constructed entirely of stainless steel. The steel skin varies from .008-inch upward and is joined together by spot welding.

The airplane is built around a cargo compartment 25 feet long, 8 feet wide and 8 feet high. A cargo hatch opens at the rear, below the upswept tail. The hatch drops down to form a ramp over which the cargo may be loaded.

The cargo capacity is 10,400 pounds. The "Conestoga" will carry one ambulance truck or two jeeps. As a personnel transport it may be fitted with 24 seats. For evacuating wounded from combat areas, the new plane will be used as a flying ambulance. For such use it will carry one ambulance and eight stretchers, or 24 stretchers alone.

Paratroops may be launched simultaneously through doors on both sides of the fuselage, while at the same time troop supplies may be dropped through the rear hatch.

Radically different in appearance, the bulbous nose of the "Conestoga" slopes down to a slimmer mid-section, which in turn sweeps up again aft to the towering rudder.

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MEDICINE

Sulfa Drug for TB

Fatty acid sulfabenamide gives encouraging results in treatment of tuberculosis. It appears safe to use, but no claims of cure are warranted yet.

➤ "ENCOURAGING" results in treatment of tuberculosis with sulfabenamide, a special kind of sulfa drug, were reported by Dr. Richard Gubner, of the Long Island College of Medicine and the Equitable Life Assurance Society of the U. S., at the Atlantic City, N. J., meeting of the American Society for Clinical Investigation.

No conclusions are as yet warranted as to the curative value of this sulfa drug, Dr. Gubner warned.

No harmful, or toxic, effects resulted even when almost an ounce was given within 16 hours, or when given over a protracted period. One patient received over 2,000 grams (about five pounds) during a 16-month period without harm.

In five cases with advanced bilateral pulmonary tuberculosis, daily doses were given for an average period of 10 months. No harmful effects of any sort were observed and the patients gained, on the average, 35 pounds. At the same time tuberculosis germs disappeared from the sputum of all five patients and X-ray pictures of their lungs showed resolution, or healing.

Encouraging results have also been obtained with other patients treated for a shorter time.

Sulfabenamide differs greatly from other sulfa drugs now in use, Dr. Gubner pointed out. It has a fatty acid linked to it and is soluble in fatty materials. The waxy outer coat of the tuberculosis germ may act as a barrier to the penetration of other sulfa drugs, Dr. Gubner explained, whereas a fatty-acid sulfa drug such as sulfabenamide might get through this barrier to attack the germ.

The small dosage that can be used because the drug remains in the body for a long time is another of sulfabenamide's properties which Dr. Gubner calls "ideal" for protracted treatment such as is necessary in tuberculosis.

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Diet for War Wounded

➤ A HIGH-CALORIE diet, with lots of meat and other protein food, is needed by the wounded fighting man during convalescence to help him gain weight and rebuild his tissues rapidly, it appears from studies reported by Dr. J. S. L. Browne, Dr. Victor Schenker and Dr. J. A. F. Stevenson, of McGill University and the Royal Victoria Hospital, Montreal, at the meeting.

After burns, fractures, wounds, operations and the like, the normal grown man goes into a state of negative nitrogen balance, that is, he loses more nitrogen from his body than he takes in in his food. This means he is using up his body tissues instead of rebuilding them.

This condition, which may last from five to 45 days, has been noted before. However, it is followed, the Montreal scientists discovered, by a period of positive nitrogen balance in which the nitrogen from food is more readily retained by patients recovering from injury than by normal persons.

This state of positive nitrogen balance, however, is easily upset. Wheeling around in a wheel chair for the first time or a fatiguing procedure such as having a cast changed during early convalescence lead to increased nitrogen output and a more negative nitrogen balance.

At the height of the early period of negative nitrogen balance, feeding protein up to about three and one-half ounces (2,000 calories) daily does not overcome the difficulty, practically the entire nitrogen content of the protein food being excreted on the same day. The nitrogen from plasma transfused

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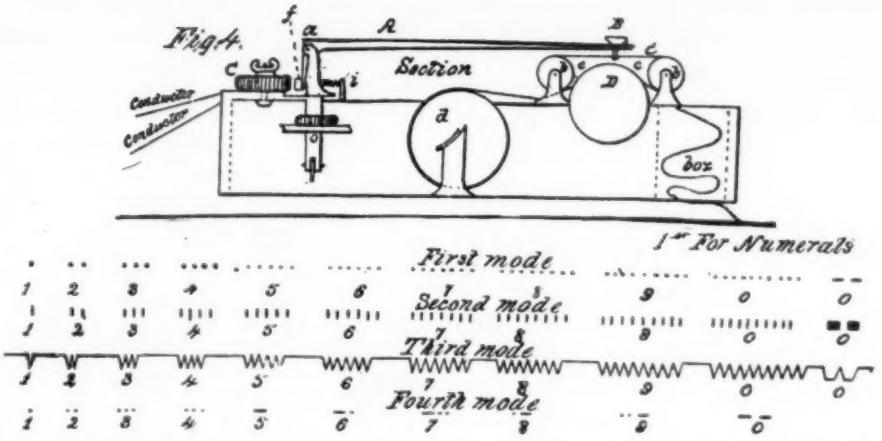

100 YEARS AGO—This is a reproduction of the drawings of the Morse telegraph and code, accompanying the patent specifications for the invention, showing tape for recording messages.

but to send it as exactly as possible and to get it into written form at the other end. For this purpose it was actually set up in a special kind of type at the sending instrument, and the jagged edges of the type run under the key so that the make-and-break of the current occurred with machine precision.

Most of the patent, dated June 20, 1840, is taken up with minute specifications for these outmoded accessories and for a now familiar recording device for the receiving instrument. The earliest telegraph instruments were provided with these devices, and the operators were themselves surprised to find that they soon learned the rhythmical dot-dash language so thoroughly that they translated as they listened, and the recording pen merely slowed up telegraphic communication.

Just before the end of the 1843 session, Congress acted favorably on a long-pending request for an appropriation of $30,000 to build an experimental telegraph line from Washington to Baltimore. Work was begun immediately.

The telegraph industry dates its beginning from May 24, 1844, when the wires had been extended to Baltimore, and a message was flashed for the first time from one city to another.

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into the veins, however, is not lost in this way.

A surgeon's civilian experience with patients recovering from operations apparently cannot always serve as a guide to handling convalescence of war wounded or other patients suffering accidental injury. Patients chronically ill before an operation, the Montreal scientists found, are usually in negative nitrogen balance after operation but, unlike previously healthy men acutely injured, they can more readily be brought into positive balance by increasing the protein food in their diet.

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PHYSICS

Centennial of Telegraph

➤ TODAY the telegraph wires are eternally busy with orders for equipment and material. News of the birth of a son or word of a soldier's unexpected leave are sped on their way by telegraph. Hundreds of messages are sent simultaneously over one pair of wires.

But the first telegram ever sent between two cities was flashed in code between Washington and Baltimore just a hundred years ago. On May 24, 1844, Samuel F. B. Morse successfully sent the Biblical quotation, "What hath God wrought!" over the telegraph line strung from the chamber of the United States Supreme Court, then in the Capitol at Washington, to the Baltimore & Ohio Railroad station in Baltimore.

The idea of the electro-magnetic telegraph is believed to have been conceived while Morse was returning from Europe in 1832. In the dining salon of the packetship *Sully,* one evening, Dr. Charles T. Jackson of Boston was discussing new discoveries in electro-magnetism.

"If the presence of electricity can be made visible in any part of the circuit, I can see no reason why intelligence may not be transmitted instantaneously by electricity," Morse is reported to have remarked at that time.

During the twelve years that followed, artist-inventor Morse struggled to perfect his invention and to secure for it a proper presentation to the public. By September, 1837, work had progressed far enough for him to feel he could conduct an experiment for his friends.

Around his room at New York University, 1,700 feet of copper wire were stretched, the sending instrument being attached to one end and the receiving mechanism to the other. The signals, made by making and breaking the circuit, flashed instantly from one instrument to the other.

The first test of the electro-magnetic telegraph awoke the interest of Alfred Vail of Morristown, N. J., himself an excellent amateur mechanic, who thereafter became associated with Morse in his undertaking. Vail convinced his father, owner of the Speedwell Iron Works, of the value of Morse's idea. Judge Vail advanced money for the project and made shop facilities available.

The chief problem to the inventor seems not to have been to get a code of dots and dashes over the electric circuit,

MEDICINE

Streptococci Germs May Make Diphtheria Worse

➤ THE CURRENT increase in cases of malignant diphtheria which has been disturbing medical and health authorities may be due to the fact that streptococci germs are entering the picture to make matters worse.

Evidence that certain streptococci act as reinforcing allies of diphtheria germs, in what scientists term synergism, to cause greater havoc than the diphtheria germs can cause by themselves, was presented by Miss Elaine Updyke and Dr. Martin Frobisher, Jr., of the Johns Hopkins School of Hygiene and Public Health at the New York meeting of the Society of American Bacteriologists.

Working with strains of streptococci and diphtheria bacilli from the same fatal case of malignant diphtheria, these scientists found that all the mice they tested survived half a cubic centimeter of diphtheria germs with one-tenth a cubic centimeter of streptococci.

When, however, the dose of streptococci was doubled without increasing the number of diphtheria germs, four of six mice died in from one to four days.

Decreasing the dose of diphtheria germs from one-half to three-tenths of a cubic centimeter but using one-tenth of a cubic centimeter of streptococci, so that the proportion of streptococci was relatively higher than in the first experiment, killed five out of six mice in 18 hours.

Other experiments gave similar results showing that the two kinds of germs acted together to make the diphtheria infection much more malignant.

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MEDICINE

May Be Cause of Cancer

Evidence has been found in patients' excretions that gland disorder, particularly of the adrenals, may be responsible for cancer and leukemia also.

➤ PRODUCTION line trouble in the body's endocrine glands, particularly the adrenals, may cause both cancer and leukemia, cancer-like disease affecting the blood.

Fresh evidence for this comes from studies by Dr. Konrad Dobriner of Memorial Hospital and Col. C. P. Rhoads, director of the hospital who is now serving in the Army, and Dr. S. Lieberman, Dr. B. R. Hill and Dr. L. F. Fieser, of Harvard University. The studies were reported at the Atlantic City, N. J., meeting of the American Society for Clinical Investigation.

In the kidney excretions of patients with cancer these scientists have found chemical substances which are not found in the excretions from normal persons. They have also found marked differences in the amounts of certain hormone chemicals excreted by normal persons and by patients with cancer and leukemia. Instead of producing the chemicals they should be manufacturing, the glands in the cancer and leukemia patients are producing other, cancer-causing chemicals, the scientists think.

The glands involved may be the sex glands or the adrenal glands or both. Faulty function of the cortex of the adrenal glands is particularly suggested. This matches evidence against the same glands recently reported by Dr. James B. Murphy, of the Rockefeller Institute, who found he could prevent development of transplanted leukemia in rats by injections of adrenal cortical hormone.

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For Overactive Thyroids

➤ SUCCESSFUL results, which may turn out to be permanent cures, are being obtained with a new medical treatment for patients with goiters from overactive thyroid glands. The results in 33 cases were reported by Dr. E. B. Astwood, of Harvard Medical School, at the meeting.

Thiouracil is the medicine that is getting these patients back to health, even causing the protruding eyes that are a common symptom in this ailment to return to normal, without operation to remove the overactive gland in the neck. First reports of use of this medicine suggested that the patients would have to take daily doses all their lives to keep their overactive thyroids under control. Now it appears that this may not be necessary.

In nine cases the daily doses of the medicine were discontinued after six to eight months. So far, two to eight months later, there has been no sign of a return of the disease.

Thiouracil treatment developed, paradoxically, from studies of substances that caused goiters. A great many such substances have been found in the past 40 years, but it was only three years ago that goiter-causing substances were discovered which did not have their action checked by extra doses of iodine. Iodine is a strategic material in the gland's manufacture of its hormone, thyroxin, which is rich in iodine.

The substances which could cause the gland to enlarge in spite of extra amounts of iodine, it was subsequently found, were not stimulating but checking its function of hormone production. The enlargement was compensatory in nature. Patients with the kind of goiter in which popping eyes, extreme nervousness and thinness are symptoms have glands which produce too much hormone.

Sulfaguanidine, rape seed, allylthiourea (which may be a component of rape seed) and phenylthiourea were the first of these anti-thyroid substances discovered. A search for more active ones, in which 100 chemicals were tested, led to thiouracil. No better substance has yet been found, though the search has continued.

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DOWN THE WAYS—The Liberty ship SS William E. Ritter starts on its way to help smash the axis.

Stop Salt Loss

➤ SOLDIERS working and fighting in the tropics may not need to take salt tablets after one or two weeks when they have become acclimated, if they are eating an average diet, it appears from studies reported by Dr. Jerome W. Conn, of the University of Michigan Medical School. Dr. Conn's studies were done under contract with the Office of Scientific Research and Development.

Until they have become acclimatized, Dr. Conn emphasized, men doing hard work in the tropics do need extra salt. After acclimatization, they are adequately protected against salt depletion when they eat an average diet containing about one-half ounce (15 grams) of salt daily. They are even able to compensate for the sudden withdrawal of a large part of their average salt intake when such a situation is forced upon them, as might be the case if supplies were delayed.

The reason acclimatized men can get along without the salt supplements, which frequently have untoward effects, Dr. Conn said, is that the sweat glands are able under certain conditions to stop salt from leaving the body in the sweat. This mechanism is an adaptive function, independent of the phenomenon of acclimatization, and does not go into operation until the need for salt conservation is dire.

By virtue of this mechanism, Dr. Conn reported, men are able to continue efficiently to perform hard work in a tropical climate even when sweating out as much as approximately five to nine quarts of water daily with a total daily intake of salt as low as five grams, which is about one-third the average normal salt intake.

Men who lived day and night for 35 to 72 days in a tropical climate room with a temperature of 85 degrees Fahrenheit and 85% humidity furnished the evidence of salt-saving function of the sweat glands. While in this tropical climate room they worked on a bicycle ergometer for five hours a day.

When pushed by the physiological load of high sweat gland volume and low available salt, the studies showed, the sweat glands can produce sweat containing one-fourth the amount of salt in the average sweat of a fully acclimatized man with plenty of salt available and one-tenth as much as is found in the sweat of the unacclimatized man.

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GENERAL SCIENCE

Widow of Dr. Ritter Christens Liberty Ship

➤ THE LIBERTY SHIP *SS William E. Ritter* was successfully launched at 10 a.m. on Wednesday, May 3, with Mrs. Mary Bennett Ritter, widow of Dr. Ritter, pronouncing the christening words as sponsor, and Mrs. S. J. Holmes, wife of a close friend and associate of Dr. Ritter at the University of California, serving as co-sponsor and shattering the champagne bottle on the vessel's bow.

The launching took place at the Permanente Metals Corporation Yard No. Two, at Richmond, Calif., only a few miles from Berkeley, where both the Ritters lived and served with distinction for many years, Dr. William E. Ritter as professor of zoology at the University of California and Dr. Mary Bennett Ritter as University physician for women.

Flower girl at the ceremony represented both the constructing company and the university, for she was Mrs. Seth B. Benson, welder in Yard No. Two, who is the wife of a member of the zoology faculty in private life.

The principal speaker was Dr. Harry Beal Torrey, longtime associate of Dr. Ritter. Dr. Torrey briefly reviewed the long career and manifold activities of his old friend, and in particular his collaboration with the late E. W. Scripps in the founding of several scientific organizations, beginning with the Scripps Institution of Oceanography and culminating with Science Service.

Bidding the *William E. Ritter* Godspeed, Dr. Torrey said, "Where this ship goes he will go, in the hope of peace, willing to struggle to the last for freedom for all men, in the spirit of a brave, far-seeing naturalist."

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FOR FREEDOM'S SAKE—Present at the launching of the SS William E. Ritter, ship named after the well-known naturalist, were: (seated) Mrs. Mary Bennett Ritter, sponsor; (standing, left to right) Mrs. Seth B. Benson, flower-girl; Dr. Harry Beale Torrey, speaker; Mrs. Joseph Grinnell, matron of honor; The Reverend Horace Westwood; Mrs. Samuel J. Holmes, co-sponsor, and Dr. Samuel J. Holmes, triggerman.

PUBLIC HEALTH

Some Headache Powders Cause Bromide Poisoning

➤ A WARNING against the danger of bromide intoxication, or poisoning, from headache powders taken to overcome the effects of war worries is issued by Dr. Roy R. Kracke and Dr. William R. Platt, of Emory University, Ga. (*Journal, American Medical Association,* May 13)

"There seems to be an increase in this type of intoxication caused, according to the Federal Trade Commission, by increased consumption of various agents designed to soothe the nerves of a population at war living in a scarcity of doctors," the two physicians state.

They report two cases of men picked up apparently drunk who subsequently were found to be suffering from bromidism. In each case the patient had been taking daily large numbers of a brand of headache powders which contain seven and one-half grains of potassium bromide each. One man had taken six to 10 of these powders daily for years, the other had been taking six packages daily for one week and on one day was seen to take 13 powders.

Pointing out that "increasing numbers of cases of bromide intoxication are to be expected with increasing self-medication, caused by the present depletion of civilian physicians," the doctors urge all physicians to become familiar with the symptoms of this poisoning.

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MEDICINE

Sulfadiazine Does Not Affect Coordination

➤ SULFADIAZINE given prophylactically to members of the armed forces to protect them from meningitis in case of a threatened epidemic will not affect their ability to pilot an airplane, drive a jeep or perform other tasks requiring hand-eye coordination and swift reaction, it appears from studies reported. (*Journal, American Medical Association,* May 13)

The studies were made by Dr. Alison H. Price, of Jefferson Medical College and Hospital, Philadelphia, and John C. Pedulla, safety examiner for the Pennsylvania State Police.

Sulfadiazine in amounts usually considered adequate for treatment or prevention of certain infections was given to 90 healthy young men medical students. Eye-hand coordination and reaction time before and after the sulfadiazine were tested on apparatus used to determine the fitness of automobile drivers. The same tests were given to 44 students who did not receive any sulfadiazine and who served as controls.

No significant difference was found between the controls and the men taking sulfadiazine. What effects there might have been if the men had been suffering from an infection in addition to receiving the drug was, however, not learned from the tests.

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MEDICINE

Extra Doses of Vitamins May Help Treatment of TB

➤ SOME of the B vitamins may help to make promin a better medicine for tuberculosis, it appears from studies reported by Dr. G. M. Higgins of the Mayo Clinic.

When this relative of the sulfa drugs is given by mouth to growing white rats it exerts a rather severe toxic effect, he found. Over-irritability, occasional paralysis, some loss of appetite, cyanosis and anemia are among the changes in these animals following doses of promin. The animals lost weight and gradually lost their hair.

When, however, the promin-treated animals were allowed to partake freely of B vitamins as they desired, their intakes of thiamin, riboflavin and pyridoxine greatly increased, sometimes sixfold over the amounts considered essential for normal nutrition.

While taking these extra amounts of the vitamins, they did not show signs of toxic effects of promin. There were no signs of irritability, they did not grow bald, nor did they lose their appetites or any weight. Signs of cyanosis were far less marked and the anemic condition improved.

Although Dr. Higgins' report does not refer to any human application of his findings, they suggest that extra doses of B vitamins or a diet rich in vitamin B foods might help prevent toxic symptoms in patients under promin treatment and thus, perhaps, extend its usefulness.

Science News Letter, May 20, 1944

PUBLIC HEALTH

U. S. Death Rate Higher In First Quarter 1944

➤ AN INCREASE of nearly 8% in the death rate for the first quarter of 1944 over the corresponding period of 1943 is reported by the Metropolitan Life Insurance Company for its industrial policy holders.

Provisional data for the general population of the United States show a similar picture, the report states.

The increase in war deaths and the influenza epidemic were chiefly responsible for the increased death rate. In January, when the influenza epidemic was at its peak, the death rate from all causes combined was the highest in 11 years. The influenza death rate was five times as high as in the previous year and exceeded any rate registered since the widespread epidemic of 1936-1937.

Tuberculosis, measles, scarlet fever, diphtheria, and diarrhea and enteritis of children have all shown increased death rates during 1944.

The rise in the meningitis death rate which started in 1943 continued, and was about 60% higher during the first quarter of 1944 than the corresponding period last year.

Death rates for diseases afflicting mothers in childbirth have also increased, although the birth rate has been decreasing.

Only bright spot in the rather gloomy picture is the fact that homicides were fewer this year than last. War deaths from enemy action more than doubled, suicides were up slightly, and accidents increased 12.3%, a large part of this coming from the increase the first three months of this year of motor vehicle fatalities.

Science News Letter, May 20, 1944

IN SCIEN

INVENTION

New Hypodermic Needle Makes Proper Insertion

➤ WITH THOUSANDS of new, hastily-trained hospital aides expected to use hypodermic needles nowadays, a device that will help to make the insertion to proper depth and at proper angle might come in handy. Such a device is offered by H. P. Gorman of Rye, N. Y., under patent 2,347,179.

It consists of a light frame, in which the syringe is held within a light helical spring. When properly "cocked," a slanting-edged annular end-piece is set against the patient's arm. A trigger-like arrangement releases the spring, which carries the syringe forward and thrusts the needle home to a predetermined depth. Then the plunger of the syringe can be operated in the conventional manner.

Science News Letter, May 20, 1944

GENERAL SCIENCE

War Equipment Packaging Should Be Done Properly

➤ OVERPACK rather than underpack, was the advice given to American manufacturers packaging war equipment of all types for overseas shipping to Allied forces, by Lt. Comdr. Boyd R. Lewis, speaking at the Packaging Conference and Exposition of the American Management Association in Chicago.

"The success of an entire campaign may depend on supplies being given the necessary protection for safe delivery," Commander Lewis declared.

Combat areas are hard going for men and hard going for materials, he continued: "Handling facilities are meager in ports which have been recently taken over. A lot of work is done on men's backs. Packages which would normally carry in the United States are just not good enough to be handled over and over again."

In the New Guinea area, from which the speaker recently returned, clothing quickly mildews, shoes grow moldy, guns and machines easily rust because of heat, humidity and rain. The prevention is proper packaging.

Science News Letter, May 20, 1944

NE FIELDS

PSYCHIATRY

Suicide Increase Likely In Post-War Period

➤ AN INCREASE in suicides after the war was predicted by Dr. James H. Wall, of the New York Hospital, at the Philadelphia meeting of the American Psychiatric Association.

The present low suicide rate, which has been reflected even in mental hospitals, is accounted for by the peak of employment and, Dr. Wall pointed out, by the facts that more lives have purpose and aggression is turned outwards as a result of the war.

Electric shock treatments have been "outstandingly helpful in curing suicidal tendencies" in mental patients, Dr. Wall said.

Science News Letter, May 20, 1944

PUBLIC HEALTH

Aerial Transport Of Disease Discussed

➤ MUTUAL PROBLEMS, from politics to pure food and drugs, that affect the health of all the people of the Americas were discussed at the Fifth Pan American Conference of National Directors of Health in Washington.

Spread of diseases from one country to another, always a problem, is made more acute by the war, Dr. Hugh S. Cumming, retired Surgeon General of the U. S. Public Health Service and provisional president of the conference, pointed out.

Increase in air travel between American countries has increased the hazards, too, because undetected infections such as yellow fever may be carried not only by passengers but by stowaway mosquitoes. Provisions of the International Sanitary Convention of 1933 for guarding against this danger may need to be changed to meet present conditions.

Protection against unsafe food and drugs is a federal responsibility in the United States, Surgeon General Parran, U. S. Public Health Service, pointed out. The responsibility, however, does not extend to foods and drugs that are exported from this country. Extending this protection against adulterated or impure food and drugs and vaccines to people in all the Americas may require strengthening of laws in each individual country, or some international agreement might be worked out in the future to meet this problem.

Political interference with national health services may be a problem in some of the American nations, it was indicated by Dr. J. Barros Barreta of Brazil.

Even animal diseases present a problem for these national health officials, since some of these diseases may spread to man. Prevention of their spread between countries is also a matter to be planned by international cooperation.

Science News Letter, May 20, 1944

METALLURGY

Machine Shop Iron Wastes Are Made Into Briquets

➤ MACHINE SHOP iron wastes, resulting from such machining operations as turning, boring, chipping and filing, may, by a new process, be coked with the use of certain coals into briquets in the factory where this type of scrap is produced and remelted in small cupola furnaces for reuse. The common practice for years has been to compress them with heavy presses into bricks for shipment to steel manufacturers for use in open hearth or blast furnaces.

The process was explained at the recent meeting of the American Foundrymen's Association in Buffalo by Dr. H. W. Gillett, of Battelle Memorial Institute, where much development work is carried on in metallurgy, particularly in many phases of the government's metallurgical war research.

In this new method the chips and other wastes are mixed with certain types of coal and the mass coked into briquets by heating. The briquets are from 75% to 85% metal. While coal is not ordinarily thought of as a plastic, Dr. Gillett said, there are some coals that, in heating in the process of coking, go through a very plastic range, becoming soft enough to flow around and engulf such materials as iron chips used with the ground coal. Suitable coals, he stated, are Powellton, Sewell and Upper Freeport. The resulting briquets can be handled with a lifting magnet.

Cupolas are shaft furnaces very much like a blast furnace but vary greatly in size. As stated by Dr. Gillett, the cupola is differentiated from other melting media by the small size of its individual charges and taps. In some of the tests at the Battelle Institute a 12-inch cupola was used.

Science News Letter, May 20, 1944

STATISTICS

Longevity of Americans Reached Peak in 1942

➤ THE AVERAGE length of life of the American people reached a peak of 64.82 years, the highest on record to date, in 1942, statisticians of the Metropolitan Life Insurance Company report.

The average girl baby who celebrated her first birthday that year can expect to live longer than the proverbial threescore and ten years. She can expect to live till she is 71 years old, the statisticians have figured.

She gains almost two years over the average expectation of life at birth by surviving the first, dangerous year of life, and gains still more by being a girl. Among white males, the average age at death will be over 70 only for those who have reached their fortieth birthday.

The longevity record established in 1942 probably will not be equalled in 1943 or 1944 because of the war, it is pointed out.

"A very large proportion of those now at work will live to the usual retirement age," the statisticians state in discussing the 1942 longevity record. "Age 65 will be attained by more than two-thirds of the persons now between 25 and 35, by almost three-quarters of those now 45, and by four-fifths of persons 55 years old. The number of years remaining after 65 is quite appreciable; for the average person it is 13.12 years, while for those in a state of health better than average the outlook is even more favorable."

Science News Letter, May 20, 1944

MEDICINE

Wheeled Stretcher May Be Useful to Army

➤ A STRETCHER intended to relieve the bearers of some of their wearying work is offered by Ernest Friedlaender of Detroit, for patent 2,348,210. Near the forward end is a pair of light, wheel-bearing legs, which are able to support as much as 80% of the whole load. These operate on floors, roads and in other places where the going is smooth. When the bearers come to rocky, muddy or otherwise unsuitable ground, they simply swing the legs up under the stretcher, where they are secured by a latch, and carry the stretcher in the ordinary way.

Science News Letter, May 20, 1944

AGRICULTURE

Uncle Sam Grows Rubber

Roots, stems and leaves of many plants native to the U. S. are possible rubber sources. Most promising, however, are the Russian dandelion and Mexican guayule.

By MARTHA G. MORROW

See Front Cover

➤ RUBBER is already being harvested from plants growing in Uncle Sam's own back yard. The leaves, stems, roots and other parts of numerous plants native to the U. S. or which can be grown here easily are being investigated as a possible source of emergency rubber.

Goldenrod, milkweed, rabbit brush and the Madagascar rubber vine are among the many plants which have been considered from time to time. The two most promising plants, however, are kok-saghyz, popularly known as the Russian dandelion, and guayule, native to northern Mexico and already growing in border sections of the United States.

MAKE RUBBER—Guayule plants such as these grow during the wet season, and rubber is formed during the dry season, when little growth occurs. The picture on the cover of this SCIENCE NEWS LETTER shows guayule seed at the Forest Service nurseries in California being covered with a thin layer of sand to keep it from blowing away.

The long taproot of the kok-saghyz, a domesticated relative of the familiar dandelion which creeps into our gardens and lawns, contains most of the rubber-bearing latex. The latex can also be seen oozing from flower stems or leaf midribs that have been cut. When the dried roots are broken, long elastic strands of rubber can be seen stretching between the broken ends.

Easy to Extract

Rubber from the kok-saghyz root is of a good grade, being about intermediate between that obtained from the guayule plant and from the tropical Hevea rubber tree, the source of most of our commercial rubber in the past. It is comparatively easy to extract rubber from the roots as they can be ground and the rubber floated off. The great merit of the dandelion lies in the fact that it can be harvested and the roots processed the same year that it is planted.

The kok-saghyz was developed by the Soviet government in an effort to overcome the lack of a domestic source of natural rubber. A number of expeditions were sent out by the Soviet government a decade or two ago to collect all plants showing signs of being potential sources of rubber, and several hundred types of plants were investigated. A little-known dandelion was finally selected as showing the most promise. It was named kok-saghyz, meaning "chew root."

The plant was cultivated and improved, and the U. S. S. R. built up quite a kok-saghyz rubber-producing industry. At present about 200,000 acres or more are reported to be under cultivation.

First Shipment in 1942

A number of unsuccessful attempts were made by the United States Department of Agriculture during the last decade to get kok-saghyz seed, then still very much in the experimental stage. Early in 1942, however, the Department of State and the Soviet Ambassador, Maxim Litvinoff, were instrumental in clearing the way for the first shipment. Other shipments followed, so that scientists in the United States, Canada and South America could begin to experiment with the rubber-growing plant.

RUSSIAN DANDELION—Rubber is contained in the long taproot of these kok-saghyz plants, which are being investigated by the Bureau of Plant Industry, Soil and Agricultural Engineering of the U. S. Department of Agriculture as an emergency source of rubber.

The Russian dandelion is definitely a cool-climate plant. It is suited for winter growth in the South and for summer growth in the northern tier of states from Vermont to Oregon. In less than nine months after planting the roots can be harvested for rubber.

Experimental plots here in the States have yielded up to 7,900 pounds of green roots per acre, but the yield averages between 4,000 and 5,000 pounds. Three-fourths of the weight of the roots is lost in drying, and their average rubber content is 4½%. Thus between 50 and 60 pounds of rubber can usually be harvested per acre.

Although the rubber contained within the roots averages only 4½% of the dry weight of the plant, some roots have been found to contain 12 to 22% rub-

ber. By proper selection and breeding it may therefore be possible to produce kok-saghyz plants which yield between 300 and 400 pounds of rubber an acre. The project is still in the experimental stage.

A number of difficulties have been encountered in raising kok-saghyz plants. The seed is small and unless treated, germinates slowly and unevenly. The plants grow slowly during the first few months and the weeds tend to crowd them out. This makes them expensive to cultivate. In selecting the best soil for planting, consideration must be given not only to the ease with which the plants flourish, but also to the difficulty encountered in digging them up.

The guayule plant is already well known in some localities as a source of rubber. Approximately 393 long tons of rubber were harvested last year from shrubs grown in the states, and in Mexico 7,000 tons were produced from wild plants.

Biologically Different

Rubber is contained not only in the roots of the guayule plant, but in the stems as well. Biologically it differs from other plants in that the rubber is produced in separate cells. In the kok-saghyz bush, Para rubber tree and others there are connected tubes or elongated cells to contain the rubber.

Guayule grows well in Texas, New Mexico, Arizona and southern California. The seeds are grown first in nursery beds, then transplanted into the field. One of the worst problems has always been in weeding, which used to be done by hand. Within the last year an oil spray has been developed which kills the plant's competitors for a place in the sun, but leaves the guayule unharmed.

The optimum yield is not obtained from the plant until it is four to seven years old. The end of the second year is the earliest that rubber extraction is practicable. It can be harvested at any season, however, which is a decided advantage. From 1,600 to 2,000 pounds of rubber per acre can be gotten from plants which are four or five years old.

Wet Season Shrub

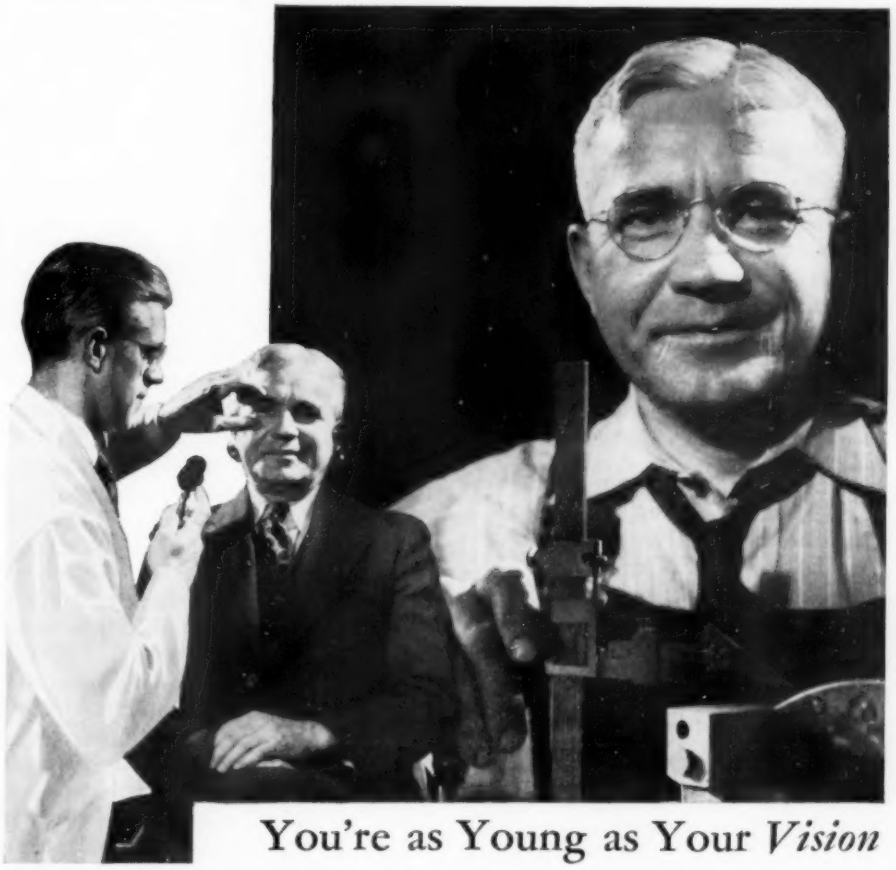
The shrub grows during the rainy season, then the rubber is formed during the dry season when little growth occurs. In cultivating the plant, regions must be selected where there is enough rain to make it grow well, but where this is followed by a dry period sufficiently long for the plant to form a good supply of rubber.

The pebble-mill process is the conventional way of extracting rubber from guayule. This is the same used in extracting rubber from kok-saghyz. The whole shrub, having first been dried to solidify the small particles of rubber, is ground up under water.

Small "worms" of rubber mixed with the natural resin of the plant rise to the surface, but the wood fibers sink to the bottom. Dirt, picked up by the sticky resin, makes the product inferior to other types of natural rubber.

A new method of milling rubber from guayule has recently been devised. Here the plant is ground under water while still green, before the small particles of rubber sap harden. The rubber diffuses into the water and is removed in an ordinary cream separator. It comes off as a white liquid, being just slightly yellower than the liquid latex of tree rubber.

Rubber may be extracted from the Madagascar rubber vine, botanically known as *Cryptostegia grandiflora,* by bleeding the stems. The plants, which are grown for their handsome foliage and flowers in many parts of Florida, can be bled for *(Turn to next page)*



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Not many people realize the great advances made in conserving human vision during the past few years. And not many know, either, the high precision of modern eye examination or the visual comfort and keenness that professional skill is able to restore. If you have the slightest suspicion that your eyes need attention, see that they get it—promptly. Glasses may not be necessary.

Whether glasses are needed or not, neglect cannot help. The only help available to you is the professional and technical skill of the ophthalmologists, optometrists and opticians in your community who have made a lifework of visual care. They know what can happen to your vision. You don't. Better consult one of them today.

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Do You Know?

California claims 270 species and subspecies of native *rodents.*

Lard is now used to coat frozen meat to prevent its drying in storage.

There are over 70 non-food industrial uses for *sugar;* sugar is used even in welding.

Nylon outlasts natural pig bristle three to one, resists solvents, is not attacked by rats, mice or moths.

Tobacco was once used by native Indians in Middle America as a medicine and also as incense in their religious ceremonies.

The federal government maintains 99 *fish hatcheries,* producing each year between six and seven billion fish to stock American waters.

A *camera* that takes pictures in one-millionth of a second is used in studying what happens in the instantaneous flash when a high explosive detonates.

Fluorochemistry, a new term, embraces the theory and use of fluorescence, phosphorescence and radiation; it concerns itself with the emission of light, both visible and invisible.

The *electronic heating* process can be used to dehydrate compressed foods without case-hardening or burning the product; the time required is but one-tenth of ordinary oven dehydration.

The *horse family* is supposed to have evolved in North America and migrated via Alaska to Asia 3,000,000 years ago; there the true horse developed, backtracked to America 1,000,000 years ago and became extinct in past ages.

When war suspended amateur *radio* activities in 1941 and put "ham" stations off the air, there were some 60,000 amateur operators of both sexes and all ages in the United States; 25,000 of them are now in war service.

Periodical *mackerel* scarcity off the northeast American coast is due to unusual winds that create currents which take the baby mackerel out to sea, or to unexplained shortages of the microscopic surface animals and plants eaten by them.

From Page 331

rubber as often as every other day. The rubber is of an excellent grade, but 4,000 to 5,000 stems would probably have to be cut to get a pound of the latex.

Goldenrod, which brightens hills and fields almost everywhere in the fall, showed the most promise of rubber content in tests conducted by the late Thomas A. Edison of species native to the United States. Here it is the leaf of the plant which contains the rubber. Up to the present time, however, it has not been practical to produce rubber of a quality acceptable to the American market. The tensile strength and resistance to abrasion are far below that of Hevea rubber.

The Allies urgently need rubber for war and civilian uses. Large factories located at strategic points within the United States are turning out vast quantities of synthetic rubber to help meet that need. But natural rubber alone can perform specific duties and enables synthetic rubbers to satisfactorily perform a number of additional tasks.

The amount we can obtain from plants grown within the states is infinitesimal in contrast with the supply of natural rubber we received before the war, but in an emergency every little bit helps.

If you would like to have seeds of the guayule and kok-saghyz plants and be able to grow some of your own, you can secure the Rubber Plants Unit of THINGS of Science, a kit prepared by Science Service, by sending 50 cents to SCIENCE NEWS LETTER, 1719 N. St., N.W., Washington 6, D. C., and asking for unit No. 42.

Science News Letter, May 20, 1944

MINERALOGY

Huge U.S. Diamond

➤ THE FINDING of the largest diamond ever unearthed in the eastern United States was announced at the annual meeting of the Virginia Academy of Science in Richmond, Va., by Dr. Roy J. Holden, head of the geology department of the Virginia Polytechnic Institute. It was found at Peterstown, West Virginia, by William P. Jones of that town, and has been named the Punch Jones diamond. Dr. Holden presented a technical description of the stone based on his laboratory studies.

This diamond, a third larger than the largest ever found in eastern United States and the second largest ever found anywhere in America, weighs 34.46 carats, or 6.892 grams, he reported. It is hard enough so that a corner of the crystal readily scratches sapphire and a crystal face of carborundum. Its high refractive power is indicated by the brilliance and distribution of light transmitted by it.

In form the crystal is a hexoctahedron with all 48 faces present. The faces are not bright and shining but have a rather dull luster somewhat like ground glass.

No other diamonds have ever been found in the immediate vicinity of Peterstown. This small West Virginia Appalachian mountain town is close to the Virginia line, about 25 miles from Blacksburg, the site of the Polytechnic Institute, where this crystal was studied.

The theory advanced by Dr. Holden is that this diamond was brought to the discovery site many years ago by river wash from metamorphic rock formations well above the place where it was discovered.

The precious stone was actually found more than 12 years ago. Its value, however, was not recognized. It was carefully preserved merely because of its unusual appearance.

The finding was accidental. Young Jones, one of a family of 16 children, all boys, was pitching horseshoes with his father in a vacant lot owned by the family. The diamond was unearthed in one of the cavities gouged out by the horseshoes. It was sent to the college for examination about a year ago. Its existence has been a secret until now.

The widespread distribution of diamonds in the Appalachian region has not been fully explained, Dr. Holden stated. They have been found in an area 600 miles long and 200 miles wide, extending into eight states. They have been found in 26 localities, most of them in North Carolina and Georgia.

Diamonds are found also in California, the North Central states and in Arkansas. The California stones have been found in gold washings. The Arkansas findings are associated with peridotite dikes, and have their origin in that rock. The first Arkansas diamonds were found in 1906.

Since 1906, according to a scientist of the U. S. Bureau of Mines, approximately 50,000 diamonds have been found in Arkansas. Their average weight is a little less than a carat. Among them,

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MEDICINAL AND CONDIMENT SEEDS (No. 6018)

Contains 3 packets of seeds of medicinal plants, one large nux vomica seed, three packets of condiment plant seeds, 7 exhibit legend cards and an 8-page Members' Bulletin which tells how to grow these plants, describes the use and characteristics of each, and suggests experiments and research.

TREATED WOOD AND CLOTH UNIT (No. 6020)

Contains 4 specimens of wood, 2 swatches of cloth, 3 gummed photographs, and the 5 exhibit legend cards for them. The 7-page Members' Bulletin tells how the specimens demonstrate advances of chemistry in combatting the destruction of wood by decay and termites, and of wood and cloth by fire. 3 experiments are suggested.

LODESTONE MAGNETIC UNIT (No. 6030)

Contains a large nugget of lodestone (magnetite) from Arkansas, a compass card, package of iron filings, two fine steel English needles, an iron nail and an exhibit legend card. The 8-page Members' Bulletin includes 17 illustrations, outlines 26 experiments. If you really want to see some of the effects that magnetism produces, you will send for this unit.

RAYON UNIT (No. 6034)

Contains 5 specimens, linters, loose and sheet form pulp, auto tire cord, lining fabric—all relating to rayon, with 5 exhibit legend cards for them. They show the first steps in making rayon, with examples of 2 of the rayon products used in our war effort. The 4-page Members' Bulletin tells about the exhibits and gives 4 experiments to be performed with them.

PLANT HORMONE UNIT (No. 6021)

Contains samples of Hormodin, the substance that induces roots to grow on plant cuttings, and of Parachlorophenoxyacetic Acid, the substance that stimulates unfertilized flowers to produce seedless fruits, induces leaf modification, and "setting". The 5-page Members' Bulletin gives instructions for 6 experiments on roses, on tomato, cucumber, squash and other plants.

OIL SEED UNIT (No. 6031)

Contains 4 packages of oil-producing seeds, safflower, linseed, cottonseed and soybeans, with legend card for each. The 5-page Members' Bulletin gives data on each species, telling the value of each in vegetable oils, and why such oils have become nationally important since the war. 4 experiments are suggested.

GLASS FIBER UNIT (No. 6040)

Contains 6 envelopes, each enclosing a skein of basic fiber made of glass. The 6 exhibit legend cards are so arranged that the fiber samples can be affixed to them. The 4-page Members' Bulletin offers information on manufacture and uses of glass fiber, properties and 5 experiments that reveal them, and probable future uses.

SULFUR UNIT (No. 6022)

Contains specimens of Sphalerite, Sulfur-bearing Limestone, Pyrites, Crude Sulfur and Flowers of Sulfur, 5 exhibit legend cards to go with them, and an 8-page Members' Bulletin which tells the uses of sulfur. 12 experiments, also, are outlined, to give a better understanding of this substance, the basis of many war materials.

UNUSUAL FABRICS UNIT (No. 6023)

Contains 7 specimens of plasticized cellulose-coated fabric, redwood bark fiber useful as a "wool" admixture, a cloth-like material made without weaving, a fabric laminated with acetate membrane, and a woven plastic substitute for leather. There are 5 exhibit legend cards and a 5-page Members' Bulletin of explanation which also describes 3 experiments.

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however, is the largest diamond ever discovered in the United States, one which weighed 40.22 carats.

Some American diamonds are of gem quality. Most of them, however, are industrial stones.

Science News Letter, May 20, 1944

MINERALOGY

Fluorescence Shows Percentage of Molybdenum

➤ GOVERNMENT-dedicated patent is No. 2,346,661, obtained by Ralph S. Cannon, Jr., of Falls Church, Va., and an American-born citizen of Japanese ancestry, Kiguma J. Murata of Washington, D. C., both in the employ of the U. S. Geological Survey. They have discovered that the percentage of the war-vital alloy metal, molybdenum, in certain types of ore can be accurately estimated by means of the fluorescent glow given off when the ore is irradiated with invisible ultraviolet light. They have worked out a table of colors that correspond to the percentages of molybdenum present.

Science News Letter, May 20, 1944

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BOTANY

NATURE RAMBLINGS by Frank Thone

Flowers for the Bride

➤ THE BRIDE wears a wreath and carries flowers, not only where our Occidental customs and culture prevail, but in lands and among peoples as alien in their ways as the Orient and the South Sea Islands. Where life is such a perennial struggle for bare subsistence, scarcely above the threshold of actual want, that the people never have a chance to develop much sentiment or esthetic appreciation, the bride may get no flowers. Just about everywhere else on earth she receives her floral dues.

Reasons for this custom (if one needs bother to find reasons) usually grope more or less vaguely after an assumed primitive "fertility cult"—that because flowers precede fruit, crowning the bride with them was expected to aid, in some mystic or magic way, to crown the marriage with the blessing of children.

Traditional use of a wreath of orange blossoms, even in lands where orange trees do not grow and wax ones have to be substituted, would seem to lend some support to this idea. Just how this custom got started might make an interesting subject for a bit of ethnological and historical research, for the whole citrus tribe is alien to our West, and oranges and their kin came to the Mediterranean world after a very long trek from the old citrus homeland in southeastern Asia, presumably via India and Persia. Perhaps the very fact that these were exotic fruits may have lent them added glamor—although so far as that goes the orange flower could win its way on its own merits of beauty and perfume, not to mention the golden glory of the fruit that follow.

But when we look at the bride's bouquet, these ethnological speculations become less plausible. For of all the late spring and early summer flowers at her choice, she is likeliest to carry either roses or lilies. These are flowers native to the Mediterranean lands whence much of our basic culture stems. Undoubtedly brides carried them, wore garlands of them, long before the first orange flowers found their way west. And neither roses nor lilies result in edible fruit. There seems to be no reason for having them at the wedding, except that they are beautiful and fragrant. Which, after all, is reason enough.

Science News Letter, May 20, 1944

CHEMISTRY

Possible Drug From Peel Of Citrus Fruits Patented

➤ HESPERIDIN, a compound occurring in the white lining of citrus fruit peel, has shown some promise of usefulness as a material for the production of drugs for reducing blood pressure, and also for offsetting the toxic effects of one of the standard agents for the treatment of syphilis. Although these uses are still in the experimental stage, it has seemed worthwhile to Ralph H. Higby of Ontario, Calif., to take out patent 2,348,215 on a process for its manufacture by chemical extraction from crushed citrus fruits.

Science News Letter, May 20, 1944

METALLURGY

High-Silicon Cast Iron Thermal Expansion Tested

➤ THE LINEAR thermal expansion of two high-silicon cast irons has recently been measured by the National Bureau of Standards. One contained approximately 14% silicon and 3% molybdenum; the other was without appreciable molybdenum. The difference in expansion rates between the two was found to be slight.

These high-silicon metals are unusually resistant to many corrosive chemicals such as hot sulfuric acid, copper sulfate solutions and tin tetrachloride. Accurate information of the thermal expansion of a metal or alloy is essential for its efficient use.

Both those tested were found to have somewhat higher expansion coefficients than electrolytic iron for temperature ranges from 68 to 572 degrees Fahrenheit, and appreciably higher coefficients for higher temperatures.

Science News Letter, May 20, 1944

• First Glances at New Books •

➤ ARCHAEOLOGY, history and folkways focus about the missions built long ago in the Southwest by pioneers of faith and civilization; after long neglect, they are now becoming increasingly integrated with the living present. Edgar L. Hewett and Reginald Fisher tell vividly an important sector of the story in MISSION MONUMENTS OF NEW MEXICO (*Univ. of New Mexico Press*, $4).

Science News Letter, May 20, 1944

➤ ARTILLERY officers, gunners and students of ballistics will find much of value in the new condensed technical MATHEMATICS FOR EXTERIOR BALLISTICS by Gilbert Ames Bliss (*Wiley*, $2). It is a timely book on the mathematics used in the theory and computation of projectories.

Science News Letter, May 20, 1944

Just Off the Press

AIRCRAFT MECHANIC'S POCKET MANUAL—Joseph A. Ashkouti—*Pitman*, 186 p., illus., paper, $1.50, 3rd rev. ed.

THE AMERICAN ILLUSTRATED MEDICAL DICTIONARY—W. A. Newman Dorland—*Saunders*, 1,668 p., illus., plain, $7; thumb-indexed, $7.50, 20th ed.

BEHIND THE SURGEON'S MASK—James Harpole—*New Home Library*, 308 p., 69c.

CANCER, A Study for Laymen—Clarence C. Little, comp.—*Farrar & Rinehart*, 122 p., illus., paper, free.

DOGS FOR DEMOCRACY; The Story of America's Canine Heroes in the Global War—Thomas Young—*Bernard Ackerman*, 32 p., illus., $1.

EVERYBODY'S WEATHER—Joseph Gaer—*Lippincott*, 96 p., illus., $2.

FIFTY YEARS IN A MARYLAND KITCHEN—Mrs. B. C. Howard—*Barrows*, 234 p., $2.50.

FOWL AND GAME COOKERY—James Beard—*Barrows*, 196 p., $2.

FRANCE IN SUNSHINE AND SHADOW—Tryphosa Bates-Batcheller—*Brentano's*, 202 p., $2.50.

THE GEOGRAPHY OF THE PEACE—Nicholas John Spykman, ed. by Helen R. Nicholl—*Harcourt, Brace*, 66 p., maps, $2.75.

THE INCOMPLETE ANGLERS—John D. Robins—*Duell, Sloan and Peace*, 229 p., illus., $3.

JAPAN: ITS RESOURCES AND INDUSTRIES—Clayton D. Carus and Charles Longstreth McNichols—*Harper*, 252 p., illus., $3.50.

THE LAND WE LIVE ON—Carroll Lane Fenton and Mildred Adams Fenton—*Doubleday, Doran*, 89 p., illus., $2.50.

MANUAL OF HUMAN PROTOZOA—Richard R. Kudo—*Charles C. Thomas*, 125 p., illus., $2.

PHYSICS WORKBOOK AND LABORATORY GUIDE—Harry R. Gail—*Ginn*, 393 p., illus., paper, $1.32.

PICTORIAL GUIDE TO MACHINE SHOP PRACTICE—H. Grisbrook and C. Phillipson—*Emerson*, 91 p., illus., $1.50.

THE PSYCHOLOGY OF WOMEN, A Psychoanalytic Interpretation, Vol. I.—Helene Deutsch—*Grune & Stratton*, 399 p., $4.50.

RADIO RESEARCH 1942-1943—Paul F. Lazarsfeld and Frank N. Stanton, ed.—*Essential Books*, 599 p., $5.

RELATIVITY AND ITS ASTRONOMICAL IMPLICATIONS — Philipp Frank — *Addison-Wesley Press*, 23 p., illus., paper, 50c. The significance of general relativity presented in the language of the layman.

SELECTED EXPERIMENTS FROM LABORATORY MANUAL FOR INTRODUCTORY COLLEGE CHEMISTRY—Joseph A. Babor and Alexander Lehrman—*Crowell*, 289 p., illus., paper, $1.

SHOP JOB SHEETS IN RADIO, Book I—Fundamentals — Robert Neil Auble — *Macmillan*, 134 p., illus., paper, $1.50.

SO LONG AGO—E. Boyd Smith—*Houghton Mifflin*, 36 p., illus., $2. A child's book.

"TELEVISION: THE REVOLUTION"—Robert E. Lee—*Essential Books*, 230 p., $2.

TEN YEARS IN JAPAN—Joseph C. Grew—*Simon and Schuster*, 554 p., illus., $3.75.

WAR AND PEACE AIMS—*United Nations Infor. Off.*, 127 p., paper, 40c, Special Supplement No. 3 to the United Nations Review.

THE WOODY PLANTS OF MAINE, Their Occurrence and Distribution—Fay Hyland and Ferdinand H. Steinmetz—*Univ. Press, Orono, Maine*, 72 p., illus., paper, 50c, Univ. of Maine Studies No. 59. This is a key to the trees, shrubs and woody vines of the State of Maine.

YOUR EYES—Sidney A. Fox—*Knopf*, 191 p., $2.

Science News Letter, May 20, 1944

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❁ *MIMEOGRAPHER for postal cards and note paper resembles the ordinary desk blotter holder which has a flat removable top carrying a knob and a curved lower surface. The cut stencil is put on the curved surface of this newly patented device and clamped in place by a special arrangement of grooves.*

Science News Letter, May 20, 1944

❁ *SLEEPING COVER for a baby's crib mattress, just patented, consists of a cloth envelope into which the mattress is slipped. The roomy top side, under which the baby is laid, has an adjustable soft-padded neck opening, and a slit fitted with a fastener extending beyond the baby's feet.*

Science News Letter, May 20, 1944

❁ *HOSE ASSEMBLIES for fuel, oil and hydraulic lines in aircraft, motor vehicles, refrigerators and hydraulically operated machine tools, have been developed by use of a rubber-like vinyl plastic lining. It is immune to the action of highly concentrated benzol and other benzene products.*

Science News Letter, May 20, 1944

❁ *THE BOMB-SHAPED 57-pound water-cooled electric motor shown in the picture is only 13 inches long and five in diameter, yet it has a rating of 30 horsepower and 6,000 revolutions a minute. It is used to drive propellers of small model airplanes in large wind tunnels where flying conditions are simulated.*

Science News Letter, May 20, 1944

❁ *LIFTING APPARATUS to help pick up sheets of flat metal from a pile consists of a patented rubber vacuum cup arrangement with a pair of handles. When spread the handles flatten the cup against the metal, and when squeezed together raise its center to create a vacuum and firmly grip the sheet.*

Science News Letter, May 20, 1944

❁ *PICK-UP CANE for one who can not stoop, has a hinged finger recessed near its lower end which can be swung out and down to form with the end of the cane a pair of grasping jaws. This patented device is operated by the forefinger in a ring on the handle and a rod to the hinged piece.*

Science News Letter, May 20, 1944

❁ *ACID-PROOF MORTAR, particularly suitable for equipment used in the production of explosives, pigments and other chemicals, is made of sulfur plasticized with synthetic rubber. It is unaffected by acids, corrosive salt or mild alkaline solutions.*

Science News Letter, May 20, 1944

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 208.

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